

WEST Search History

DATE: Friday, December 20, 2002

<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>			
L5	L4 same (nucleat\$4 or seed)	2	L5
L4	diamondoid same diamond	46	L4
L3	L2 same diamond	66	L3
L2	adamantane	3945	L2
L1	admantane	52	L1

END OF SEARCH HISTORY

(FILE 'HOME' ENTERED AT 09:20:31 ON 20 DEC 2002)

FILE 'CAPLUS' ENTERED AT 09:20:38 ON 20 DEC 2002

L1 74 S ADAMANTANE (1P) DIAMOND
L2 8 S L1 AND (SEED OR NUCLEAT?)

FILE 'STNGUIDE' ENTERED AT 09:26:50 ON 20 DEC 2002

FILE 'CAPLUS' ENTERED AT 09:29:06 ON 20 DEC 2002

L3 17 S DIAMONDROID (1P) DIAMOND
L4 0 S L3 AND (SEED OR NUCLEAT?)

=>

AN 1996:119465 CAPLUS
 DN 124:216576
 TI An investigation of the hydrogenation of aromatic hydrocarbons to yield saturated cycloalkanes: relevance to graphite-diamond transformation
 AU Sen, Rahul; Sumathy, R.; Rao, C. N. R.
 CS Solid State and Structural Chemistry Unit and Materials Research Centre, Indian Institute of Science, Bangalore, 560 012, India
 SO THEOCHEM (1996), 361, 211-16
 CODEN: THEODJ; ISSN: 0166-1280
 PB Elsevier
 DT Journal
 LA English
 CC 75-7 (Crystallography and Liquid Crystals)
 AB Step-wise hydrogenation of benzene, naphthalene and pyrene to yield the corresponding satd. derivs. was examd. at the AM1/RHF level to understand the graphite-**diamond** conversion in a H plasma. Hydrogenation of these aroms. proceeds readily with a negligible activation barrier, suggesting that satn. of a graphite surface by interaction with H atoms probably is very facile. Addn. of CH₃. and C₂H. radicals to a partially satd. hydrocarbon yields **adamantane**, which can act as the **nucleation** site for **diamond** growth, a situation that also obtained with partially hydrogenated graphite.
 ST arom hydrocarbon hydrogenation graphite diamond transition;
nucleation diamond graphite hydrogenation arom hydrocarbon
 IT Crystal **nucleation**
 (of diamond on graphite and relevance of hydrogenation of arom. hydrocarbons to satd. cycloalkanes)
 IT 281-23-2P, **Adamantane**
 RL: PNU (Preparation, unclassified); PREP (Preparation)
 (formation from cyclohexane having 2 Me groups and ethynyl group and relevance to graphite-**diamond** transition)
 IT 7782-42-5, Graphite, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (hydrogenation of arom. hydrocarbons to satd. cycloalkanes and relevance to graphite-diamond transformation)
 IT 7782-40-3P, Diamond, preparation
 RL: PNU (Preparation, unclassified); PREP (Preparation)
 (hydrogenation of arom. hydrocarbons to satd. cycloalkanes and relevance to graphite-diamond transformation)
 IT 71-43-2, Benzene, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrogenation to cyclohexane and relevance to graphite-diamond transition)
 IT 91-20-3, Naphthalene, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrogenation to decalin and relevance to graphite-diamond transition)
 IT 3170-58-9, Cyclohexyl
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with Me and relevance to graphite-diamond transition)
 IT 2229-07-4, Methyl
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with cyclohexyl and relevance to graphite-diamond transition)

2 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1994:460597 CAPLUS
DN 121:60597
TI Using zeolites as substrates for diamond thin film deposition
AU Kwan, Michael C.; Gleason, Karen K.
CS Dep. Chem. Eng., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SO Materials Research Society Symposium Proceedings (1994), 317 (Mechanisms of
Thin Film Evolution), 523-8
CODEN: MRSPDH; ISSN: 0272-9172
DT Journal
LA English
CC 49-1 (Industrial Inorganic Chemicals)
AB Zeolites have been used as a potential substrate for CVD **diamond**
deposition. By satg. the pore channels of a silicalite crystal, which are
spaced approx. 10 .ANG. apart, with hydrocarbon seeds to induce and
control **nucleation**, films have been grown in a hot filament
chem. vapor deposition (HFCVD) system under std. deposition conditions,
using acetone as the carbon source. The hydrocarbons used were
adamantane, naphthalene, anthracene, 2,3-benzanthracene, and
1,2:5,6-dibenzanthracene. To enhance **nucleation**, a high
pressure pre-deposition period was used initially. Characterization of
these films through electron diffraction and Auger electron spectroscopy
indicates that polycryst. .beta.-SiC imbedded in an amorphous matrix is
initially formed and large, well faceted **diamond** crystals are
subsequently **nucleated**.
ST zeolites substrate diamond thin film deposition
IT Zeolites, uses
RL: USES (Uses)
(silicalite, substrates, for diamond thin film deposition)
IT 7782-40-3P, Diamond, preparation
RL: PREP (Preparation)
(deposition of thin-film, with zeolites as substrates)
IT 53-70-3, 1,2:5,6-Dibenzanthracene 91-20-3, Naphthalene, uses 92-24-0,
2,3-Benzanthracene 120-12-7, Anthracene, uses 281-23-2,
Adamantane
RL: USES (Uses)
(in **diamond** thin film deposition on zeolite substrates)

L2 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2002 ACS
 AN 1990:129650 CAPLUS
 DN 112:129650
 TI Formation of diamond films
 IN Hotsuta, Hajime; Yamamoto, Sadaaki; Ruisu, Robaato Marukomu
 PA Research Development Corp. of Japan, Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C30B029-04
 CC 75-1 (Crystallography and Liquid Crystals)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01103991	A2	19890421	JP 1987-260129	19871015
AB	The title method comprises modification of the substrate surface with tricyclo[3.3.1.1 ³ ,7] decane or its deriv. for control of nucleation . An .alpha.-Zr(HPO ₄) ₂ .H ₂ O single-crystal substrate was immersed in an aq. soln. of 1-tricyclo[3.3.1.1 ³ ,7] decane amine for 24 h for equil. adsorption on the substrate. The substrate was washed and dried. Chem. modification of the substrate surface was confirmed by attenuated total reflection IR absorption spectra, and the diamond film was deposited by evapn. of graphite using a KrF excimer laser beam.				
ST	diamond deposition modified substrate surface; adamantane adsorption modified substrate surface				
IT	281-23-2, Adamantane 768-94-5, Tricyclo[3.3.1.1 ³ ,7]decan-1-amine 2094-72-6 24886-73-5 RL: PRP (Properties) (surface modification of substrates by adsorption of, for vapor-phase deposition of diamond)				
IT	7782-40-3, Diamond , uses and miscellaneous RL: USES (Uses) (vapor-phase deposition of, on substrate surface modified by adsorption				

AN 1999:455038 CAPLUS

DN 131:123158

TI Crystal growth of CVD diamond and some of its peculiarities

AU Giekarczyk, W.

CS Institute Physics, Polish Academy Sciences, Warsaw, 02668, Pol.

SO Crystal Research and Technology (1999), 34(5-6), 553-563

CODEN: CRTEDF; ISSN: 0232-1300

PB Wiley-VCH Verlag Berlin GmbH

DT Journal

LA English

CC 75-1 (Crystallography and Liquid Crystals)

Section cross-reference(s): 69

AB Expts. demonstrate that CVD **diamond** can form in gas environments that are C-undersatd. with respect to **diamond**. This fact is, among others, the most serious violation of principles of chem. thermodyn. None of the principles is broken when CVD **diamond** formation is considered not a phys. process consisting in growth of crystals but a chem. process consisting in accretion of macromols. of polycyclic satd. hydrocarbons belonging to the family of org. compds. the smallest representatives of which are **adamantane**, **diamantane**, **triamantane** etc. Since the polymantane macromols. are in every respect identical with **diamond** single crystals with H-terminated surfaces, the accretion of polymantane macromols. is a process completely equiv. to the growth of **diamond** crystals. However, the accretion of macromols. must be described in a way different from that used to describe the growth of crystals because some thermodyn. functions are defined in manners different for solid phases (i.e. crystals) and for mols. The CVD **diamond** formation is a chem. process proceeding on surfaces of polymantane **seed** macromols. (**diamond seed** crystals) under conditions under which the H-terminated surfaces exist but are chem. unstable. The process consists of several cyclically recurring consecutive reactions that can be thermodynamically coupled. The present approach makes it possible to predict correlations between the growth rate as well as the phase compn. of deposited films and some important process variables. The predicted dependencies are perfectly consistent with exptl. results.

ST diamond CVD crystal growth

IT Vapor deposition process

(chem.; crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT Crystal growth

Thermodynamics

(crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT Hydrocarbons, processes

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(polymantanes; crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT 7782-40-3, Diamond, properties

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD

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